

U.S. Serial Application No.: 10/802,506
Attorney Docket No.: C-7230
Response to Office Action mailed 08/31/2006

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Listing of the Claims

The listing of the claims will replace all prior versions and listings of claims in the application.

What is claimed is:

1. (currently amended) An integrated process for the production of acetic acid and vinyl acetate comprising the steps:

(a) producing in a first reaction zone a first product stream comprising acetic acid, wherein the acetic acid is produced using an exothermic reaction, and wherein at least a portion of the heat from the production of acetic acid is removed from the first reaction zone and at least a portion of the heat removed from the production of acetic acid is transferred into a heat transfer system;

(b) contacting in a second reaction zone an acetic acid reaction stream comprised of at least a portion of the acetic acid from the first product stream with an oxygen-containing gas in the presence of a catalyst to produce a second product stream comprising vinyl acetate monomer;

(c) directing at least a portion of the second product stream to a purification section for purifying vinyl acetate to purify at least a portion of the vinyl acetate in the second product stream; and

(d) removing at least a portion of the heat transferred to the heat transfer system from at least a portion of the first product stream and providing at least a portion of the heat removed from the first product stream the heat transfer system to at least one of the acetic acid reaction stream and the purification section for purifying ~~the~~ vinyl acetate.

2. (original) The process of claim 1 wherein the first product stream is produced by contacting in the first reaction zone a gaseous feedstock comprising a hydrocarbon selected from the group consisting of ethylene, ethane, and mixtures thereof with an oxygen-containing gas in the presence of a catalyst.

3. (original) The process of claim 1 wherein the first product stream is produced by carbonylation of an alkyl alcohol with carbon monoxide in a liquid reaction medium in the first reaction zone.

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4. (currently amended) The process of claim 3 wherein the heat transfer system comprises a steam condensate stream, and wherein at least a portion of the heat removed from the production of acetic acid at least a portion of the first product stream is transferred to [[a]] the steam condensate stream which is used to provide heat removed from the production of acetic acid to at least one of the acetic acid reaction stream and the purification section for purifying the vinyl acetate.

5. (original) The process of claim 4 wherein the steam condensate stream is directed to a flash vessel maintained at a temperature of about 150°C to about 160°C.

6. (original) The process of claim 5 wherein the flash vessel is maintained at a pressure of about 4.0 kg/cm² to about 5.3 kg/cm².

7. (currently amended) The process of claim 4 wherein heat removed from the production of acetic acid is transferred from the steam condensate of the heat transfer system to a vinyl acetate azeotrope column feed stream.

8. (currently amended) The process of claim 4 wherein the heat removed from the production of acetic acid is transferred from the steam condensate of the heat transfer system to a reboil stream of a light ends column in the purification section for purifying the vinyl acetate.

9. (currently amended) The process of claim 4 wherein the heat removed from the production of acetic acid is transferred from the steam condensate of the heat transfer system to a reboil stream used in conjunction with a finishing column in the purification section for purifying the vinyl acetate.

10. (currently amended) The process of claim 4 wherein the heat removed from the production of acetic acid is transferred from the steam condensate of the heat transfer system to the acetic acid reaction stream.

11. (currently amended) The process of claim 4 wherein the heat removed from the production of acetic acid is transferred from the steam condensate of the heat transfer system to a reboil stream of a light ends column in the purification section for purifying the vinyl acetate and to a reboil stream used in conjunction with a finishing column in the purification section for purifying the vinyl acetate.

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12. (withdrawn) An integrated system for producing acetic acid and vinyl acetate comprising: (a) means for producing acetic acid through a reaction generating heat; (b) means for purifying acetic acid produced in the means for producing acetic acid; (c) means for producing vinyl acetate from at least a portion of the acetic acid produced in the means for producing acetic acid; (d) means for purifying vinyl acetate produced in the means for producing vinyl acetate; and (e) means for transferring at least a portion of the heat generated in the production of acetic acid in the means for producing acetic acid to at least one of the means for producing vinyl acetate and the means for purifying vinyl acetate.

13. (withdrawn) An integrated system for producing acetic acid and vinyl acetate comprising: (a) a first reactor for producing acetic acid through a reaction generating heat; (b) a first purification section for purifying acetic acid produced in the first reactor; (c) a second reactor for producing vinyl acetate from at least a portion of the acetic acid produced in the first reactor; (d) a second purification section for purifying vinyl acetate produced in the second reactor; and (e) heat exchange equipment for transferring at least a portion of the heat generated in the production of acetic acid in the first reactor to at least one of the second reactor and the second purification section.

14. (withdrawn) The integrated system of claim 13 wherein the first reactor has a reaction zone for reacting gaseous feedstock comprising a hydrocarbon selected from the group consisting of ethylene, ethane, and mixtures thereof with an oxygen-containing gas in the presence of a catalyst.

15. (withdrawn) The integrated system of claim 14 wherein the first reactor has a reaction zone for carbonylation of an alkyl alcohol with carbon monoxide in a liquid reaction medium.

16. (withdrawn) The integrated system of claim 15 comprising a heat exchanger for transferring heat from a product produced in the first reactor to a steam condensate stream.

17. (withdrawn) The integrated system of claim 16 comprising heat exchange equipment for transferring heat from the steam condensate stream to a vinyl acetate azeotrope column feed stream.

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18. (withdrawn) The integrated system of claim 16 comprising heat exchange equipment for transferring heat from the steam condensate stream to a reboil stream of a light ends column in the purification section for purifying the vinyl acetate.

19. (withdrawn) The integrated system of claim 16 comprising heat exchange equipment for transferring heat from the steam condensate stream to a reboil stream used in conjunction with a finishing column in the purification section for purifying the vinyl acetate.

20. (withdrawn) The integrated system of claim 16 comprising heat exchange equipment for transferring heat from the steam condensate stream to at least a portion of the acetic acid used to produce vinyl acetate.

21. (new) The integrated process of Claim 1, wherein the heat transfer system comprises a pump-around condensate loop in which the heat from the production of the acetic acid is removed from the first reaction zone through heat exchange between a hot reactor solution stream and a steam condensate stream.

22. (new) The integrated process of Claim 21, wherein the steam condensate stream comprising the heat from the production of the acetic acid is transferred into a low pressure flash vessel.